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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/726,399

12/03/2003

David Forehand

MEM 2657001

5565

21909

7590

10/17/2005

CARR LLP

670 FOUNDERS SQUARE

900 JACKSON STREET

DALLAS, TX 75202

EXAMINER

MITCHELL, JAMES M

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/726,399

Applicant(s)

FOREHAND, DAVID

Examiner

James M. Mitchell

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-67 is/are pending in the application.
- 4a) Of the above claim(s) 13-23,34-43,54-63,65 and 67 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12,24-33,44-53,64 and 66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to applicant's election filed July 15, 2005

Election

2. Claims 13-23, 34-43, 54-63, 65 and 67 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on July 15, 2005.
3. Applicant's election with traverse of Group I in the reply filed on July 15, 2005 is acknowledged. The traversal is on the ground(s) that Group I and Group II involve the same process. This is not found persuasive.

Because per MPEP 806.05(e) another materially different apparatus can produce the process, such as having multiple apparatuses for performing each step (i.e. performing packaging in another facility), applicant's arguments are deemed unpersuasive. Likewise, contrary to applicant's assertion that the means is limited to the claimed process, since applicant's specification does not limit to a particular means (i.e. Pg. 8, Lines 15-20), the means for depositing can be different than what is claimed. For the reasons stated, *supra*, the restriction requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

Art Unit: 2813

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 1-5, 8, 11, 25-28, 45-48, 51, 52, 64 and 66 are rejected under 35

U.S.C. 102(e) as being anticipated by Carley (U.S. 2004/0166603).

6. Carley (Fig. 5B, 7C, 8D) discloses:

(cl. 1, 45) a method for packaging at least one microscopic device, comprising: applying a sacrificial material (12, 16) to at least one microscopic device (14); applying a layer of structural material (18) adjacent the sacrificial material, the layer of structural material forming a housing adjacent at least a portion of the sacrificial material; creating one or more apertures (20) in the housing of structural material to expose at least a portion of the adjacent sacrificial material; removing the sacrificial layer (Par. 0037), wherein the housing of structural material with at least one aperture remains (Fig. 7C); depositing a protective material (26a-c) adjacent the housing of structural material overlaying at least one aperture of the housing; and curing the protective material (Par. 0049);

(cl. 2, 64) providing a gas atmosphere, wherein the pressure is greater than or equal to 1 Pascal (Pa) (Par. 0050) providing a temperature of less than 600 degrees Celsius (C) (Par. 0049);

(cl. 3, 4, 46, 47) wherein etch rate¹ is higher than structural material composed of a photoresist or polyimide (Par. 0036);

¹ Same structural and sacrificial material as claimed.

Art Unit: 2813

(cl. 5, 48) wherein the structural layer is selected from a group of Silicon Dioxide (SiO₂) and Silicon Nitride (Si₃N₄) (Par. 0036);

(cl. 8, cont. cl. 25, 45, 51) and removing the sacrificial layer comprises use of either plasma ashing or plasma etching (Par. 0036);

(cl. 11, 52) the structural layer having a thickness between .2 and about 10 microns (Par. 0052);

(cl. 66) and protective material extends² at least into one aperture ("seals port [holes]"; Par. 0012) and allowing layer to harden (i.e. layer rigid; Par. 0013-0014)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 12 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carley et al. (U.S. 2004/0166603).

9. Carley discloses the elements of paragraph 6 of this office action and a thickness for its sacrificial layer (i.e. 3 dimensional) and claimed structure, but does not disclose the thickness between .2 and 10 microns.

² Note even a layer that extends horizontally over a hole/aperture would extend into the hole region (i.e. open space/area), although not extending vertically into the hole.

Art Unit: 2813

10. In any case, applicant has not disclosed that the claimed thickness is for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. Hence the limitation would have been obvious, since it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

11. Claims 6, 7, 49, 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carley et al. (U.S. 2004/0166603) as applied to claim 2 and 25 and further in combination with Yang et al. (U.S. 2004/0046835).

12. Carley does not appear to disclose the step of removing by sputter etching or ion beam milling or chemical etching.

13. However Carley discloses the same invention except that removal is through plasma etch instead of through sputter, ion beam milling or chemical etching. Yang shows that plasma, sputter etching or ion beam milling or chemical etching is equivalent processes that form equivalent structures known in the art known. Therefore, because these processes are art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the use of for example a chemical etch instead of a plasma etch to remove material.

14. Claims 9, 10, 24-28, 31-33 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carley et al. (U.S. 2004/0166603) in combination with Farnworth et al. (U.S. 2002/0123171).

15. Carley discloses the elements stated in paragraph 6 of this office action and further discloses the step of depositing the protective material (Par. 0042) into holes (Par. 0012) and at least a portion of the surface of the housing (Par. 0043) with no material in a moveable region (22), but does not appear to explicitly disclose depositing protective material by allowing the protective material to flow into at least a portion of an aperture.

16. Farnworth teaches deposition by flowing³ a material (Par. 0032).

17. It would have been obvious to one of ordinary skill in the art to incorporate a process of flowing material in order to provide to provide a protective layer on a surface as taught by Farnworth (Par. 0032) and as suggested by Carley (apply overlayer by "other known deposition processes"; Par. 0042).

18. With respect to the thickness limitation of claim 33, see paragraph 10 of this office action.

19. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carley et al. (U.S. 2004/0166603) and Farnworth et al. (U.S. 2002/0123171) as applied to claim 25 and further in combination with Yang et al. (U.S. 2004/0046835).

³ Also wicking (i.e. capillary action in flowing of material)

Art Unit: 2813

20. Carley does not appear to disclose the step of removing by sputter etching or ion beam milling or chemical etching.

21. However see paragraph 13 of this office action.

22. Claims 1, 25 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson et al. (U.S. 6,379,988) in combination with Peterson',084 (U.S. 6,661,084).

23. Peterson (Fig. 6E-H) discloses:

(cl. 1, 25, 45) a method for packaging at least one microscopic device, comprising: applying a sacrificial material (15) to at least one microscopic device (10); applying a layer of structural material (14) adjacent the sacrificial material, the layer of structural material forming a housing adjacent at least a portion of the sacrificial material; creating one or more apertures (13) in the housing of structural material to expose at least a portion of the adjacent sacrificial material; removing the sacrificial layer (16), wherein the housing of structural material with at least one aperture remains (Fig. 6H); depositing a protective material/window (36) adjacent the housing of structural material overlaying at least one aperture of the housing.

24. Peterson does not appear to disclose curing the protective material,

25. Peterson'084 teaches curing a protective material (Col. 14, Lines 57-63).

26. It would have been obvious to one of ordinary skill in the art to incorporate a process of curing the protective layer in order to form a window as required by Peterson (item 36).

Conclusion


27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art discloses most notably in Bickford (U.S. 5,480,841) use of capillary action/wicking to fill holes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jmm
September 22, 2005


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